Software Requirements Specification

for

Library Management System

Version 1.0

Prepared by

Group Number: 35

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Version 1.0	Balaram, Chetan, Prashanth, Akhil, Vishnu	This is the very first version of the model developed and is the primary model.	23-10-21

1 Introduction

1.1 Document Purpose

Library management is always a challenging endeavour, and with the growing number of students, improved library management is essential. The library management system aims to improve library management in a city or community. "What if, instead of travelling to the library, you could check whether a book is available online?" or "through your device, you can renew or issue a book." You can use your device to issue, renew, or return a book from a library using the Integrated Library Management system.

1.2 Product Scope

The project's main goal is to keep track of information about books and library members. This database management system (DBMS) software that we designed allows us to maintain an easy circulation system between clients and libraries, to issue books with just a registered login, to search and renew any book from libraries, and to keep track of user information. Furthermore, the user can access all of these capabilities directly from their device.

1.3 Intended Audience and Document Overview

This document is intended for developers, project managers, marketers, users, roasters, and document writers. It is recommended that you read this document from the beginning without skipping any of the sections. This SRS contains the analysis of the requirements necessary for a simple design. This is a working document so the topic may change. Initially, based on the above, it may not be complete and require ongoing refinement. Requirements can be changed and new requirements can be added as the project progresses.

1.4 Definitions, Acronyms and Abbreviations

- SQL - Standard Query Language
- SRS - Software Requirement Specification
- DBMS - Database Management System.

1.5 Document Conventions

1.5.1 Heading

- Font used - Arial
- Font size - 14

1.5.2 Sub-Heading

- Font used - Arial
- Font size - 13

1.5.3 Paragraph

- Font used **-** Arial
- Font size - 12

1.6 References and Acknowledgments

- IEEE Software Engineering Standards Committee, “IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications”, October 20, 1998.

- R. Elmasri and S. B. Navathe, Fundamentals of Database Systems, 6/e, Pearson Education, 2011.

2 Overall Description

2.1 Product Overview

In the library management system, we may log in as either a student or a staff member. The user can now search for any book using the title or author's name. Admins have the ability to add and update books. This system will have search features to make finding materials easier. By submitting an issue request to the library's administrator, the user can now obtain the requested book. If the student's request is approved, the student will have access to the required book. Return and renewal requests will be handled in the same manner.

2.2 Product Functionality

The online Library Management System gives real-time information on the books available in the library as well as information about the users. The major goal of this project is to reduce the amount of manual work required. We have a user login system in place, which allows students or staff to log in and access user information.

User information:

Student:

1. student id - id of student
2. email - college email id
3. password - password of student
4. login branch - branch of the student
5. first name and last name - name of the student

Staff:

1. staff id - id of staff member
2. email - college email id
3. password - password of staff login

4. branch - branch dealt by staff member

5. firstname and lastname - name of the staff member

Now after login users can search for any book based on book number or book id.

BOOKS:

1. book id - particular number assigned to the book.
2. bookname - name of the book.
3. bookauthor - author of the book.
4. copies - no.of copies available.

If the book that is being searched by a user is available then the user can put forward an issue request to the admin of the library and if the admin accepts the user request, then the book will be issued to the user.

Admin also manages books. Admin can add or update books in the library. After issuing the book, the student should return the book before the deadline otherwise the student will be penalized. So, to maintain a record of the date we use issue date and last date. In the same way when a student returns the book, admin response is compulsory and if the admin accepts the book will be returned to the library. In the same way renew request also needs admin approval and then request will be renewed.

ADMIN:

- Approves issue/return/renew requests
- Manages books

SEARCH:

- Students search for required book

ISSUE/RETURN/RENEWAL:

- Gives access to books after admin approval

2.1.1 User Classes and Characteristics

The three main user classes are:

- Library admin
- Students
- Staff

Admin handles books and approves issue/return/renewal requests, as well as ensuring that users are fined if books are not returned on time. Students are the most frequent users, and it is their responsibility to return the book in good condition and before the deadline. Staff also have access to books and, if possible, can recommend books based on their own interests.

2.1.2 Operating Environment

The operating environment should support the following software and hardware requirements to deploy it successfully.

Software Requirement:

- MySQL
- PHP
- HTML
- CSS
- SQL
- BOOTSTRAP
- WEB SERVER: XAMPP

Hardware Requirement:

- The Operating System is platform independent. We can use any Operating system like Windows, Linux.

2.3 Design and Implementation Constraints

The information of all users must be stored in a database to which the LIBRARY MANAGEMENT SYSTEM has access. The information security system of the university must be compatible with Internet applications. The library system is connected to the institute's computer and operates 24 hours a day.

Users access the library management system from any computer with Internet browsing capabilities and an Internet connection. Patrons must have their correct usernames and passwords to access the library administration system.

2.1.3 User Documentation

Online help is provided for each of the features available with the Library Management System. The user Manual describes the use of the system to Librarians and Employees. The user manual should be available as a hard copy and also as online help.

Also, a Read Me file is typically included as a standard component.

The Read Me includes a "What's NEW With This Release" section, and a discussion of compatibility issues with earlier releases. Since the installation of the Library Management System is a complex process, our experts will do it. So, an installation Guide will not be provided to the user.

USER MANUAL (outline):

- Register and fix a password.
- Login.
- Search for a book.
- Request for a book (Request of any kind).
- If the request is accepted then take the book and return it before the deadline.

2.4 Assumptions and Dependencies

The users are expected to have basic technical and computer knowledge to operate the software. The server on which it is hosted is expected to work properly and as per the software requirements and run 24 by 7.

3 Specific Requirements

3.1 External Interface Requirements

This section contains the details about the specific requirements needed for building our system and has two sections namely interfaces and functional requirements.

The types of interfaces we have requirements for are:

- User
- Hardware
- Software
- Communications

3.1.1 User Interfaces

Welcome Interface:

In this interface, the user can register for the library to access, if the user already has an account, he can directly log into his account.

Admin Login Interface:

In this interface, the admin will login using admin login. Admin will be redirected to the admin page.

Student Login Interface:

In this interface, the student will login using his username and password. He will be directed to the student page to access the library.

Logout:

This option redirects the user to the welcome interface.

3.1.2 Hardware Interfaces

- Operating system: Independent on any kind of operating system
- Hard disk : 40 GB
- RAM : 256MB
- Processor : Pentium(R)Dual-core CPU

3.1.3 Software Interfaces

The web application is developed using HTML as the front end and PHP as the back-end SQL server to store the database.

3.2 Functional Requirements

Register

- The user has to provide details about his/her name, address, phone number, email id.

Login

- Input: If the user is a student, he needs to register so that he has an account, but for an admin he has an account already created by the developer for special access.
- Output: Users will be able to use the features of the software.

3.2.1 User's Page:

3.2.1.1 Student details:

- In this section student details like name, roll number, email, branch etc. will be displayed.

3.2.1.2 Search:

- Input: Student has to enter the Name of the author or Name of the book to be issued.
- Output: List of books related to the input.

3.2.1.3 Issue Book:

- Input: Student selects the book to be issued and clicks the "issue" button by which student can place an issue request to the admin.
- Output: Conformation of the book to be issued and apology for failing issue.
- If the selected book is available the book will be issued, else error will be displayed
- When the book is issued and is about to reach the date of return, students can either return the book or renew it.

3.2.1.4 Return:

- Return the book to the library.
- Issue list will be updated and the returned book will be listed out.

3.2.1.5 Renew Book:

- Input: Fill in the details of the book to be renewed.
- Output: status of the request will be displayed in the form of a message.

3.2.1.6 Recommend Books:

- Here the user can place a request to the admin regarding a new book that is not available in the library.
- Input: Details of the book.

3.2.1.7 Books issued:

- The student can view the books currently issued by him/her and the date of issue, the date of return.

3.2.1.8 View Responses:

- Here students can view the responses given by the admin to the requests sent.
- Output: accept or reject.

3.2.2 Admin's Page:

3.2.2.1 Add books:

- Admin can add a new book to the library and specify the no of copies and other information.

3.2.2.2 View requests:

- Admin can view all kinds of requests from the students about a book and process those requests according to availability of the books.

3.2.2.3 View recommended:

- Admin can view the recommended requests by the student and add them.

3.2.2.4 Manage books:

- Here admin can view the details of books like issued books, returned books, number of copies left

4 Other Non-functional Requirements

4.1 Performance Requirements

To avoid any issues, the DBMS software produced should be able to work efficiently to provide information when needed and to store data without any latency. Among the many aspects that influence performance, the system resources must be adequate and meet the baseline requirements for the software to execute smoothly.

- To avoid problems when a request comes in, the performance should be accurate and the response time should be as short as possible.
- To avoid data loss when a server fails or a corrupted file causes a total data loss, the data should be backed up as log files on a regular basis.
- To be more effective, the DBMS should be able to manage a huge amount of data and conduct activities in less time.
- To connect to the software, the password and username will be matched to the password and name kept in the database, allowing only authenticated users to login.

4.2 Safety and Security Requirements

For reasons of safety and security, user information will be kept private and will not be shared with any other third-party organisations, ensuring that user privacy and information are protected. The data is backed up on a regular basis to ensure that it is not lost in the event of a database crash or other data loss event. The data is also saved on a private storage system, which means it cannot be viewed from the outside.

- For security reasons, the database is secured, and system users have varied restrictions on accessing it.
- Users cannot update the database; only administrators are permitted to do so.
- Admins and users should have distinct accounts so that only admins can make changes to the database.

4.3 Software Quality Attributes

Adaptability- This developed DBMS software is adaptable by any organization.

Availability- The availability of the software is easy and for everyone.

Correctness- The results of the function are pure and accurate.

Flexibility- The operation may be flexible and reports can be presented in many ways.

Maintainability- After the deployment of the project if any error occurs then it can be easily maintained by the software developer.

Portability- The software can be deployed at any machine.

Reliability- The performance of the software is better which will increase the reliability of the software.

Reusability- The data and record that are saved in the database can be reused if needed.

Robustness- If there is any error in any window or module then it does not affect the remaining part of the software.

Usability- To perform any operations and to understand the functioning of software is very easy.

Productivity- This software will produce every desired result with accuracy.

Timelines- The time limit is very important. It will save much time and provide fast accessing.

Cost effective- This software is less in cost and bearable by any organization.

Appendix A - GLOSSARY

- **HTML : HYPER TEXT MARKUP LANGUAGE.**
- **CSS : CASCADING STYLE SHEETS.**
- **PHP : HYPERTEXT PREPROCESSOR.**
- **XAMPP : OPEN-SOURCE CROSS-PLATFORM WEB SERVER SOLUTION STACK PACKAGE.**
- **MYSQL : OPEN-SOURCE RELATIONAL DATABASE MANAGEMENT SYSTEM**
- **SQL : STANDARD QUERY LANGUAGE FOR RDBMS.**
- **BOOTSTRAP : OPEN-SOURCE CSS FRAMEWORK.**

Appendix B - Group Log

Oct 20th – SRS document preparation meeting,
Tasks were divided among the 5 of us and each one had taken a subtopic to be prepared, Also including the main format of the project and outline.

Oct 21st – 5 of us had updates on what was to be precisely written in the srs document and had an understanding of the IEEE format of the SRS.

Oct 23rd – Most of us had completed the preparation of their individual parts and started working on formatting and combining all the separate topics.

Oct 24th – Final discussion about SRS document and error corrections and submission.